SEQUENCE LISTING

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    Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu
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    Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
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    Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser
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    Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
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     Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu
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Phe Ser Cys Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu

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Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 55

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Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 65 70 75

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser

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Phe Ser Arg Ala Cys Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu

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Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 55

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Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser

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Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr

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Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 60

5 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 65 70 75 80

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 10 85 90

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Cys Lys Thr Met Leu 35 40 45

Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
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Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 85 90

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25
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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Cys Thr Met Leu 5 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 10 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 75 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 15 85 <210> 19 <211> 92 20 <212> PRT <213> Artificial Sequence <223> hCG alpha subunit with Cys substituted for Thr46 25 <400> 19 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 5 10 30 Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys . 35 Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Cys Met Leu 40 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 45 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 85 50 <210> 20 <211> 92 <212> PRT 55 <213> Artificial Sequence <220> <223> hCG alpha-subunit with Cys substituted for Met47 60 <400> 20

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40	Phe	Ser	Arg 35	Ala	Туг	Pro	Thr	Pro 40	Leu	Arg	Ser	Lys	Lys 45	Thr	Met	Cys
45	Val	Gln 50	Lys	Asn	Val	Thr	Ser 55	Glu	Ser	Thr	Cys	Cys 60	Val	Ala	Lys	Ser
50	Tyr 65	Asn	Arg	Val	Thr	Val 70	Met	Gly	Gly	Phe	Lys 75	Val	Glu	Asn	His	Thr 80
55	Ala	Cys	His	Cys	Ser 85	Thr	Cys	Tyr	Tyr	His 90	Lys	Ser	•			
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Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 45

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Cys Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 60

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<212> PRT

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 40

50 Val Cys Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 55 70 75 65

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	Phe	Ser	Arg 35	Ala	Tyr	Pro	Thr	Pro 40	Leu	Arg	Ser	ГЛS	Lys 45	Thr	Met	Leu
20	Val	Gln 50	Cys	Asn	Val	Thr	Ser 55	Glu	Ser	Thr	Сув	Cys 60	Val	Ala	Lys	Ser
25	Tyr 65	Asn	Arg	Val	Thr	Val 70	Met	Gly	Gly	Phe	Lys 75	Val	Glu	Asn	His	Thr
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50	Phe	Ser	Arg 35	Ala	Tyr	Pro	Thr	Pro 40	Leu ,	Arg	Ser	Lys	Lys 45	Thr	Met	Lei
55	Val	Gln 50	Lys	Cys	Val	Thr	Ser 55	Glu	Ser	Thr	Cys	Сув 60	Val	Ala	Lys	Sei
60	Tyr 65	Asn	Arg	Val	Thr	Val 70	Met	Gly	Gly	Phe	Lys 75	Val	Glu	Asn	His	Thi

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35 40 45

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Val Gln Lys Asn Cys Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 55 60

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Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 35 85 90

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35 40 45

60 Val Gln Lys Asn Val Thr Ser Cys Ser Thr Cys Cys Val Ala Lys Ser 50 55 60

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr

5 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser

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<212> PRT

<213> Artificial Sequence

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35

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Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 40

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<212> PRT

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60 Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35 45

Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 55 5 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Cys Glu Asn His Thr 70 10 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 85 <210> 30 15 <211> 92 <212> PRT <213> Artificial Sequence <220> 20 <223> hCG alpha-subunit with Cys substituted for Thr86 <400> 30 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 25 5 Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 30 Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 60 40 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 70 75 65 Ala Cys His Cys Ser Cys Cys Tyr Tyr His Lys Ser 45 85 <210> 31 <211> 92 50 <212> PRT <213> Artificial Sequence <223> hCG alpha-subunit with Cys substituted for Tyr88 55 <400> 31 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 60

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 5 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 10 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 15 Ala Cys His Cys Ser Thr Cys Cys Tyr His Lys Ser 85 <210> 32 20 <211> 92 <212> PRT <213> Artificial Sequence <220> 25 <223> hCG alpha-subunit with Cys substituted for Leu89 <400> 32 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 30 10 Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 20 25 35 Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 35 45 40 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 55 60 45 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 65 Ala Cys His Cys Ser Thr Cys Tyr Cys His Lys Ser 50 <210> 33 <211> 92 55 <212> PRT <213> Artificial Sequence <220> <223> hCG alpha-subunit with Cys substituted for His90 60

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	Val Gln 50	Lys	Asn	Val	Thr	Ser 55	Glu	Ser	Thr	Cys	Cys 60	Val	Ala	Lys	Ser
15	Tyr Asn 65	Arg	Val	Thr	Val 70	Met	Gly	Gly	Phe	Lys 75	Val	Glu	Asn	His	Thr 80
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	Phe Ser	Arg 35	Ala	Tyr	Pro	Thr	Pro 40	Leu	Arg	Ser	ГÀЗ	Lys 45	Thr	Met	Leu
45	Val Gln 50	ГХа	Asn	Val	Thr	Ser 55	Glu	Ser	Thr	Сув	Cys	Val	Ala	Lys	Ser
50	Tyr Asn 65	Arg	Val	Thr	Val 70	Met	Gly	Gly	Phe	Lys 75	Val	Glu	Asn	His	Thr 80
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<213> Artificial Sequence

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15	Phe	Ser	Arg 35	Ala	Tyr	Pro	Thr	Pro 40	Leu	Arg	Ser	Lys	Lys 45	Thr	Met	Leu
	Val	Gln 50	Lys	Asn	Val	Thr	Ser 55	Glu	Ser	Thr	Cys	Сув 60	Val	Ala	Lys	Ser
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60 Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110

85 -

95

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Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 35 40

30 Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60

35 Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val 70 75

Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser 40 90

Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp

Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 120

50 Pro Ser Pro Ser Arg Leu Pro Gly Pro Cys Asp Thr Pro Ile Leu Pro Gln 130 135

55 <210> 38

<211> 145

<212> PRT

<213> Artificial Sequence

60 <220>

<223> hCG beta-subunit residues 101-114 were replaced with their hFSH b eta-subunit counterparts, namely hFSH beta-subunit residues 95-10 8

<400> 38

Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 5 1 10 15

Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val

Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe
50 55 60

20 Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Pro Asn Val Val 65 70 75 80

Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser 25 85 90 95

Thr Thr Asp Cys Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe 100 105 110

Gly Glu Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 115 120 125

Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln
130 135 140

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<400> 39

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55

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<213> Artificial Sequence

Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu

Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val

	Leu	Pro 50	Ala	Leu	Pro	Gln	Val 55	Val	Сув	Asn	Tyr	Arg 60	Asp	Val	Arg	Phe	
5	Glu 65	Ser	Ile	Arg	Leu	Pro 70	Gly	Cys	Pro	Arg	Gly 75	Val	Pro	Asn	Val	Val 80	
10	Ser	Tyr	Ala	Val	Ala 85	Leu	Ser	Cys	Gln	Суs 90	Ala	Leu	Сув	Arg	Arg 95	Ser	
15	Thr	Thr	Asp	Сув 100	Thr	Val	Arg	Gly	Leu 105	Gly	Pro	Ser	Tyr	Cys 110	Ser	Phe	
20	Gly	Glu	Phe 115	Gln	Asp	Ser	Ser	Ser 120	Ser	Lys	Ala	Pro	Pro 125	Pro	Ser	Leu	
	Pro	Ser 130	Pro	Ser	Arg	Leu	Pro 135	Gly	Pro	Сув	Asp	Thr 140	Pro	Ile	Leu	Pro	Gln
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30	<21	3> I		sap:	iens												
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	Cys	Gly	Phe	Сув 20	Ile	Thr	Ile	Asn	Thr 25	Thr	Trp	Сув	Ala	Gly 30	Tyr	Сув	
40	Tyr	Thr	Arg 35	Asp	Leu	Val	Tyr	Lys 40	Asp	Pro	Ala	Arg	Pro 45	Lys	Ile	Gln	,
45	Lys	Thr 50	Сув	Thr	Phe	Lys	Glu 55	Leu	Val	Tyr	Glu	Thr 60	Val	Arg	Val	Pro	
50	Gly 65	Сув	Ala	His	His	Ala 70	qaA	Ser	Leu	Tyr	Thr 75	Tyr	Pro	Val	Ala	Thr 80	
55	Gln	Cys	His	Cys	Gly 85	Lys	Cys	Asp	Ser	Asp 90	Ser	Thr	Asp	Cys	Thr 95	Val	
	Arg	Gly	Leu	Gly 100	Pro	Ser	Tyr	Cys	Ser 105	Phe	Gly	Glu	Met	Lys 110	Glu		
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	<213	3 >	Arti	ficia	al Se	equer	ıce									
5	<220 <220		hFSH subu tande	ait v	a-sul with	ounit hFSI	ana A res	alog sidu	laci es 1	king -108	the and	lead hCG	der j res	pept idue	ide (of hFSH beta- 5-145 in
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10	Asn 1	Sea	Cys	Glu	Leu 5	Thr	Asn	Ile	Thr	Ile 10	Ala	Val	Glu	Lys	Glu 15	Gly
15	Cys	Gly	/ Phę	Cys 20	Ile	Thr	Ile	Asn	Thr 25	Thr	Trp	Сув	Ala	Gly 30	Tyr	Cys
20	Tyr	Thi	Arg 35	Asp	Leu	Val	Tyr	Lys 40	Asp	Pro	Ala	Arg	Pro 45	Lys	Ile	Gln
	Lys	Thi	с Сув	Thr	Phe	Lys	Glu 55	Leu	Val	Tyr	Glu	Thr 60	Val	Arg	Val	Pro
25	Gly 65	Суя	s Ala	His	His	Ala 70	Asp	Ser	Leu	Tyr	Thr 75	Tyr	Pro	Val	Ala	Thr 80
30	Gln	Cys	His	Cys	Gly 85	Lys	Cys	Asp	Ser	Asp 90	Ser	Thr	Asp	Cys	Thr 95	Val
35	Arg	Gly	/ Leu	Gly 100	Pro	Ser	Tyr	Cys	Ser 105	Phe	Gly	Glu	Phe	Gln 110	Asp	Ser
40	Ser	Sei	Ser 115	Lys	Ala	Pro	Pro	Pro 120	Ser	Leu	Pro	Ser	Pro 125	Ser	Arg	Leu
	Pro	Gl _y 130	Pro	Ser	Asp	Thr	Pro 135	Ile	Leu	Pro	Gln					
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50	<213		Arti:	Eicia	al Se	equer	nce									
	<220 <223		hFSH subu em a	ait 1	with	hFSI	res	sidue	es 1·	-108	and	lead hCG	der p	pept: idue:	ide (of hFSH beta- 5-145 in tand
55	<400)>	42					•			-					
60			Cys	Glu	Leu 5	Thr	Asn	Ile	Thr	Ile 10	Ala	Val	Glu _.	Ъуз	Glu 15	Gly
	Cys	Gly	Phe	Cys	Ile	Thr	Ile	Asn	Thr 25	Thr	Trp	Cys	Ala	Gly 30	Tyr	Cys

23/41

5	Tyr	Thr	Arg 35	Asp	Leu	Val	Tyr	Lys 40	Asp	Pro	Ala	Arg	Pro 45	Lys	Ile	Gln
	Lys	Thr 50	Cys	Thr	Phe	Lys	Glu 55	Leu	Val	Tyr	Glu	Thr 60	Val	Arg	Val	Pro
10	Gly 65	Сув	Ala	His	His	Ala 70	Asp	Ser	Leu	Tyr	Thr 75	Tyr	Pro	Val	Ala	Thr 80
15	Gln	Сув	His	Cys	Gly 85	Lys	Cys	Asp	Ser	Asp 90	Ser	Thr	Asp	Cys	Thr 95	Val
20	Arg	Gly	Leu	Gly 100	Pro	Ser	Tyr	Сув	Ser 105	Phe	Gly	Glu	Phe	Gln 110	Asp	Ser
25	Ser	Ser	Ser 115	Lys	Ala	Pro	Pro	Pro 120	Ser	Leu	Pro	Ser	Pro 125	Ser	Arg	Leu
	Pro	Gly 130	Pro	Cys	Asp	Thr	Pro 135	Ile	Leu							
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50	Ile	Сув	Ala 35	Gly	Tyr	Cys	Pro	Thr 40	Met	Thr	Arg	Val	Leu 45	Gln	Gly	Val
55	Leu	Pro 50	Ala	Leu	Pro	Gln	Val 55	Val	Cys	Asn	Tyr	Arg 60	Asp	Val	Arg	Phe
60	Glu 65	Ser	Ile	Arg	Leu	Pro 70	Gly	Cys	Pro	Arg	Gly 75	Val	Asn	Pro	Val	Val 80
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5	Thr	Thr	Asp	Cys 100	Gly	Gly	Pro	Lys	Asp 105	His	Pro	Leu	Thr	Cys 110	Asp	Asp
	Pro	Arg	Phe 115	Gln	Asp	Ser	Ser	Ser 120	Ser	Lys	Ala	Pro	Pro 125	Pro	Ser	Leu
10	Pro	Ser 130	Pro	Ser	Arg	Leu	Pro 135	Gly	Pro	Cys	Asp	His 140	Pro	Glu	Thr	Leu
15	Val 145	Lys	Val	Lys	Asp	Ala 150	Glu	Asp	Gln	Leu	Gly 155	Ala	Arg	Val	Gly	Tyr 160
20	Ile	Glu	Leu	Asp	Leu 165	Asn	Ser	Gly	Lys	Ile 170	Leu	Glu	Ser	Phe	Arg 175	Pro
25	Glu	Glu	Arg	Phe 180	Pro	Met	Met	Ser	Thr 185	Phe	Lys	Val	Leu	Leu 190	Cys	Gly
	Ala	Val	Leu 195	Ser	Arg	Ile	Asp	Ala 200	Gly	Gln	Glu	Gln	Leu 205	Gly	Arg	Arg
30	Ile	His 210	Tyr	Ser	Gln	Asn	Asp 215	Leu	Val	Glu	Tyr	Ser 220	Pro	Val	Thr	Glu
35	Lys 225	His	Leu	Thr	Asp	Gly 230	Met	Thr	Val	Arg	Glu 235	Leu	Cys	Ser	Ala	Ala 240
40	Ile	Thr	Met	Ser	Asp 245	Asn	Thr	Ala	Ala	Asn 250	Leu	Leu	Leu	Thr	Thr 255	Ile
45	Gly	Gly	Pro	Lys 260	Glu	Leu	Thr	Ala	Phe 265	Leu	His	Asn	Met	Gly 270	ązĄ	His
	Val	Thr	Arg 275	Leu	Asp	Arg	Trp	Glu 280	Pro	Glu	Leu	Asn	Glu 285	Ala	Ile	Pro
50	Asn	Glu 290	Arg	Asp	Thr	Thr	Met 295	Pro	Val	Ala	Met	Ala 300	Thr	Thr	Leu	Arg
55	Lys 305	Leu	Leu	Thr	Gly	Glu 310	Leu	Leu	Thr	Leu	Ala 315	Ser	Arg	Gln	Gln	Leu 320
60	Ile	Asp	Trp	Met	Glu 325	Ala	Asp	Lys	Val	Ala 330	Gly	Pro	Leu	Leu	Arg 335	Ser
	Ala	Leu	Pro	Ala 340	Gly	Trp	Phe	Ile	Ala 345	Asp	Lys	Ser	Gly	Ala 350	Gly	Glu

5	Arg	Gly	Ser 355	Arg	Gly	Ile	Ile	Ala 360	Ala	Leu	Gly	Pro	Asp 365	Gly	Lys	Pro	
	Ser	Arg 370	Ile	Val	Val	Ile	Tyr 375	Thr	Thr	Gly	Ser	Gln 380	Ala	Thr	Met	Asp	
10	Glu 385	Arg	Asn	Arg	Gln	Ile 390	Ala	Glu	Ile	Gly	Ala 395	Ser	Leu	Ile	Lys	His 400	
15	Trp																
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30	<400 Ser 1	0> 4	44 Glu	Pro	Leu 5	Arg	Pro	Arg	Cys	Arg 10	Pro	Ile	Asn	Ala	Thr 15	Leu	
35	Ala	Val	Glu	Lys 20	Glu	Gly	Cys	Pro	Val 25	Сув	Ile	Thr	Val	Asn 30	Thr	Thr	
40	Ile	Cys	Ala 35	Gly	Tyr	Суз	Pro	Thr 40	Met	Thr	Arg	Val	Leu 45	Gln	Gly	Val	
45	Leu	Pro 50	Ala	Leu	Pro		Val 55	Val	Сув	Asn	Tyr	Arg 60	Asp	Val	Arg	Phe	
4 0 ,	Glu 65	Ser	Ile	Arg	Leu	Pro 70	Gly	Cys	Pro	Arg	Gly 75	Val	Asn	Pro	Val	Val 80	
50	Ser	Tyr	Ala	Val	Ala 85	Leu	Ser	Cys	Gln	Cys 90	Ala	Leu	Сув	Arg	Arg 95	Ser	
55	Thr	Thr	Asp	Cys 100	Gly	Gly	Pro	Lys	Asp 105	His	Pro	Leu	Thr	Cys 110	Asp	Asp	
60	Pro	Arg	Phe 115	Gln	Asp	Ser	Ser	Ser 120	Ser	Гув	Ala	Pro	Pro 125	Pro	Ser	Leu	
	Pro	Ser 130	Pro	Ser	Arg	Leu	Pro 135	Gly	Pro	Cys	Asp	Thr 140	Pro	Ile	Leu	Pro	

5	Gln 145	His	Pro	Glu	Thr	Leu 150	Val	Lys	Val	Lys	Asp 155	Ala	Glu	Asp	Gln	Leu 160
	Gly	Ala	Arg	Val	Gly 165	Tyr	Ile	Glu	Leu	Asp 170	Leu	Asn	Ser	Gly	Lys 175	Ile
10	Leu	Glu	Ser	Phe 180	Arg	Pro	Glu	Glu	Arg 185	Phe	Pro	Met	Met	Ser 190	Thr	Phe
15	Lys	Val	Leu 195	Leu	Сув	Gly	Ala	Val 200	Leu	Ser	Arg	Ile	Asp 205	Ala	Gly	Gln
20	Glu	Gln 210	Leu	Gly	Arg	Arg	Ile 215	His	Tyr	Ser	Gln	Asn 220	Asp	Leu	Val	Glu
25	Tyr 225	Ser	Pro	Val	Thr	Glu 230	Lys	His	Leu	Thr	Asp 235	Gly	Met	Thr	Val	Arg 240
	Glu	Leu	Сув	Ser	Ala 245	Ala	Ile	Thr	Met	Ser 250	Asp	Asn	Thr	Ala	Ala 255	Asn
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35	His	Asn	Met 275	Gly	Asp	His	Val	Thr 280	Arg	Leu	Asp	Arg	Trp 285	Glu	Pro	Glu
40	Leu	Asn 290	Glu	Ala	Ile	Pro	Asn 295	Asp	Glu	Arg	Asp	Thr 300	Thr	Met	Pro	Val
45	Ala 305	Met	Ala	Thr	Thr	Leu 310	Arg	Lys	Leu	Leu	Thr 315	Gly	Glu	Leu	Leu	Thr 320
	Leu	Ala	Ser	Arg	Gln 325	Gln	Leu	Ile	Asp	Trp 330	Met	Glu	Ala	Asp	Lys 335	Val
50	Ala	Gly	Pro	Leu 340	Leu	Arg	ser	Ala	Leu 345	Pro	Ala	Gly	Trp	Phe 350	Ile	Ala
55	Asp	Lys	Ser 355	Gly	Ala	Gly	Glu	Arg 360	Gly	Ser	Arg	Gly	Ile 365	Ile	Ala	Ala
60	Leu	Gly 370	Pro	Asp	Gly	Lys	Pro 375	Ser	Arg	Ile	Val	Val 380	Ile	Tyr	Thr	Thr
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385 390 395 400

Gly Ala Ser Leu Ile Lys His Trp 405

<210> 45

<211> 125 <212> PRT

<213> Artificial Sequence

<220>

<223> hCGbeta, delta116-135, S138C

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Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu

1 10 15

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10

Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30

25

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 35 40 45

30 Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60

Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val 35 65 70 75 80

Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser 85 90 95

40

Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110

45

Pro Arg Phe Gly Pro Cys Asp Thr Pro Ile Leu Pro Gln 115 120

50 <210> 46

<211> 130

<212> PRT

<213> Artificial Sequence

55 <220>

<223> hCGbeta, delta121-135, S138C

<400> 46

60 Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15

Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30

- 5 Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 35 40 45
- Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60
- Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val 65 70 75 80
 - Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser 85 90 95
- 20
 Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110
- 25 Pro Arg Phe Gln Asp Ser Ser Ser Gly Pro Cys Asp Thr Pro Ile Leu 115 120 125
- Pro Gln
- <210> 47
- - <213> Artificial Sequence
 - <220>
- <223> hCGbeta,delta126~135,S138C
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- <400> 47
- Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15 45
 - Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30
- 50
 Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val
 35
 40
 45
- 55 Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60
- Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val 60 65 70 75 80
 - Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser

85 90 95

Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 5 100 105 110

Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Gly Pro 115 120 125

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Cys Asp Thr Pro Ile Leu Pro Gln 130 135

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<210> 48

<211> 140

<212> PRT

<213> Artificial Sequence

20

<220>

<223> hCGbeta, delta131-135, S138C

<400> 48

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Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15

30 Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 35 40 45

Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 60 40

Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val 65 70 75 80

Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser 85 90 95

50 Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110

Pro Arg Phe Gln Asp Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 115 120 125

Pro Ser Gly Pro Cys Asp Thr Pro Ile Leu Pro Gln 130 135

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<210> 49 <211> 92

PCT/US02/35914

WO 03/040695 <212> PRT <213> Artificial Sequence <220> <400> 49 10 15 20 25 65 70

<223> hCG alpha-subunit, Lys91 replaced with Glu

Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro

Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys

Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu 40

Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 55

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Glu Ser 30 85

<210> 50 <211>

92 <212> PRT

<213> Artificial Sequence

<220>

<223> hCG alpha-subunit loop 2, Lys91 replaced with Met

<400> 50

Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 5 10

45

35

40

Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys

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Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu

55 Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 60 70

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Met Ser

85 90

<210> 51
5 <211> 92
 <212> PRT
 <213> Artificial Sequence

<220>
10 <223> hCG alpha-subunit loop 2, Lys44 replaced with Ala
<400> 51

Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 15 1 5 10 15

Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 20 25 30

Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Ala Lys Thr Met Leu 35 40 45

Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
50 55 60

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 65 70 75 80

Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 35 85 90

<210> 52 <211> 92 40 <212> PRT

<213> Artificial Sequence

<220>

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<223> hCG alpha-subunit loop 2, Lys44 replaced with Glu and Lys45 repla
ced with Gln

<400> 52

Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro 1 5 10 15

Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 20 25 30

Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Glu Gln Thr Met Leu 35 40 45

Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 50 55 60

Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 75 70

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Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 85

- 10 <210> 53
 - <211> 92
 - <212> PRT
 - <213> Artificial Sequence
- 15 <220>
 - <223> hCG alpha-subunit loop 2, Lys44 replaced with Arg
 - <400> 53
- 20 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro
- Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 25
- Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Arg Lys Thr Met Leu 30
 - Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
- 35 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr
- 40 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 90 85
- <210> 54 45
 - <211> 139
 - <212> PRT
 - <213> Artificial Sequence
 - <220>
- 50 hCG analog - beta101-145, alpha, residues 3-100 deleted from hCG <223> beta-subunit with alpha-subunit fused to the end of the remaining beta-subunit
- <400> 54
- 55 Ser Lys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp Pro Arg 5 15 1
- 60 Phe Gln Asp Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu Pro Ser 25 20

Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln Ala

- 5 Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro Phe
- Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys Phe 10
- Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu Val 15

Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser Tyr 100 105 110

20 Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr Ala 120

- 25 Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser 135
- <210> 55 30 <211> 31 <212> PRT <213> Homo sapiens

<400> 55 35

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<400> 56

Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu Pro Ser

- 40 Pro Ser Arg Leu Pro Gly Pro Ser Thr Asp Pro Ile Leu Pro Gly 20 25
- <210> 56 45 <211> 10 <212> PRT <213> Artificial Sequence

<220> 50 <223> X1-Asp-Asp-Asp-Lys-Ser-Ym-Cys-Zn, where X, Y, and Z refer to any tail portion amino acids and 1, m, and n refer to the lengths of the tail portion amino acids

<220> 55 <221> MISC FEATURE Xaa refers to any tail portion amino acids and n refers to the <223>

lengths of the tail portion amino acids

Xaan Asp Asp Asp Asp Lys Ser Xaan Cys Xaan

1 5 10

5 <210> 57 <211> 92 <212> PRT <213> Artifical Sequence 10 <220> <223> An hCG truncated β-subunit analog fused to the hCG alpha-carboxyterminus <400> 57 15 Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys 20 Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser 25 Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr 30 Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser Asp Asp Pro Arg Phe Gly Pro Cys Asp Thr Pro Ile Leu Pro Gln 35 **<210> 58** <211> 145 <212> PRT <213> Artificial Sequence 40 <220>

<223> hCG beta-subunit with Cys substituted for Arg94

<400> 58

Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15

50 Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30

Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val
55 40 45

Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60

60

45

Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Pro Asn Val Val 65. 70 75 80

- 5 Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Cys Arg Ser 85 90 95
- Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110
- Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 115 120 125
 - Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln 130 135 140

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- <210> 59
- <211> 145
- <212> PRT
- <213> Artificial Sequence

25 <220>

- <223> hCG beta-subunit with Cys substituted for Arg95
- <400> 59

30

- Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15
- 35 Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr 20 25 30
- Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val
 40 45
- Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe
 50 55 60
 - Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Pro Asn Val Val 65 70 75 80
- Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Cys Ser 85 90 95
- 55 Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 105 110
- Pro Arg Phe Gln Asp Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 115 120 125

Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln
130 135 . 140

5 <210> 60 <211> 145 <212> PRT <213> Artificial Sequence 10 <220> <223> hCG beta-subunit with Cys substituted for Ser96 <400> 60 15 Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 20 Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 25 40 Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 55 30 Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Pro Asn Val Val 35 Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Cys 85 40 Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp 100 Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu 45 115 125 Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln 130 135 50 <210> 61 <211> 145 <212> PRT <213> Artificial Sequence 55

60

<400> 61

<220>

<223> hCG beta-subunit with Cys substituted for Thr97

	Ser 1	Lys	Glu	Pro	Leu 5	Arg	Pro	Arg	Cys	Arg 10	Pro	Ile	Asn	Ala	Thr 15	Leu	
5	Ala	Val	Glu	Lys 20	Glu	Gly	Cys	Pro	Val 25	Суз	Ile	Thr	Val	Asn 30	Thr	Thr	
10	Ile	Сув	Ala 35	Gly	Tyr	Cys	Pro	Thr 40	Met	Thr	Arg	Val	Leu 45	Gln	Gly	Val	
15	Leu	Pro 50	Ala	Leu	Pro	Gln	Val 55	Val	Cys	Asn	Tyr	Arg 60	Asp '	Val	Arg	Phe	
20	Glu 65	Ser	Ile	Arg	Leu	Pro 70	Gly	Cys	Pro	Arg	Gly 75	Val	Pro	Asn	Val	Val 80	
20	Ser	Tyr	Ala	Val	Ala 85	Leu	Ser	Сув	Gln	Сув 90	Alá	Leu	Сув	Arg	Arg 95	Ser	
25	Cys	Thr	Asp	Cys 100	Gly	Gly	Pro	Lys	Asp 105	His	Pro	Leu	Thr	Cys 110	Asp	Asp	
30	Pro	Arg	Phe 115	Gln	Asp	Ser	Ser	Ser 120	Ser	Lys	Ala	Pro	Pro 125	Pro	Ser	Leu	
35	Pro	Ser 130	Pro	Ser	Arg	Leu	Pro 135	Gly	Pro	Ser	Asp	Thr 140	Pro	Ile	Leu	Pro	Gln
	<210 <210 <210 <210	l> : 2> 1	52 145 PRT	iloi:	al Se	mie	7.CE										
40	<220 <223)>			-subi			ı Cys	s sub	ostit	ute	l for	Thi	c98			
45	<400)> (52														
	Ser 1	Lys	Glu	Pro	Leu 5	Arg	Pro	Arg	Cys	Arg 10	Pro	Ile	Asn	Ala	Thr 15	Leu	
50	Ala	Val	Glu	Lys 20	Glu	Gly	Cys	Pro	Val 25	Cys	Ile	Thr	Val	Asn 30	Thr	Thr	
55	Ile	Cys	Ala 35	Gly	Tyr	Cys	Pro	Thr 40	Met	Thr	Arg	Val	Leu 45	Gln	Gly	Val	
60	Leu	Pro 50	Ala	Leu	Pro	Gln	Val 55	Val	Cys	Asn	Tyr	Arg 60	Asp	Val	Arg	Phe	

Glu Ser Ile Arg Leu Pro Gly Cys Pro Ara Gly Val Pro Asn Val Val 38/41

	65	70	75	80
5	Ser Tyr Ala Val Ala 85	Leu Ser Cys Gln Cys	s Ala Leu Cys Arg Arg 95	Ser
10	Thr Cys Asp Cys Gly 100	Gly Pro Lys Asp His	Pro Leu Thr Cys Asp	Asp
	Pro Arg Phe Gln Asp	Ser Ser Ser Lys	Ala Pro Pro Pro Ser 125	Leu
15	Pro Ser Pro Ser Arg 130	Leu Pro Gly Pro Ser 135	r Asp Thr Pro Ile Leu 140	Pro Gln
20	<210> 63 <211> 145 <212> PRT <213> Artificial S	equence		
25	<220> <223> hCG beta-sub	unit with Cys subst	ituted for Asp99	
	<400> 63			
30	Ser Lys Glu Pro Leu 1 5	Arg Pro Arg Cys Arg	g Pro Ile Asn Ala Thr 15	Leu
35	Ala Val Glu Lys Glu 20	Gly Cys Pro Val Cy 25	s Ile Thr Val Asn Thr 30	Thr
	Ile Cys Ala Gly Tyr 35	Cys Pro Thr Met Th	r Arg Val Leu Gln Gly 45	Val
40	Leu Pro Ala Leu Pro 50	Gln Val Val Cys As 55	n Tyr Arg Asp Val Arg 60	7 Phe
45	Glu Ser Ile Arg Leu 65	Pro Gly Cys Pro Ar 70	g Gly Val Pro Asn Val 75	. Val 80
50	Ser Tyr Ala Val Ala . 85	Leu Ser Cys Gln Cy 90	s Ala Leu Cys Arg Arg 95	ser
55	Thr Thr Cys Cys Gly 100	Gly Pro Lys Asp Hi 105	s Pro Leu Thr Cys Asp 110) Asp
	Pro Arg Phe Gln Asp 115	Ser Ser Ser Ser Ly 120	s Ala Pro Pro Pro Ser 125	Leu
60	pro Ser Pro Ser Arg	g Leu Pro Gly Pro Se	r Asp Thr Pro Ile Leu	n Pro Gln

39/41

140

135

130

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<210>
           64
    <211>
    <212>
           PRT
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    <220>
    <223> An hCG alpha-subunit analog with Gly-Gly-Cys at its carboxyterminus
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    <400> 64
    Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro
15
     Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys
     Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu
20
     Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
     Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr
25
     Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser Gly Gly Cys
30
     <210> 65
     <211>
            92
     <212> PRT
     <213> Artifical Sequence
35
     <220>
            An hCG alpha-subunit analog with Asp in place of Asn52 and Cys in place of
     <223>
     Ser92
     <400> 65
40
     Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn Pro
     Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys Cys
45
                                     25
     Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met Leu
50
     Val Gln Lys Asp Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys Ser
     Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His Thr
55
     Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser
                     87
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<210> 66 <211> 145

<212> PRT

<213> Artificial Sequence

5 <220>

<223> hCG beta-subunit with Cys substituted for Ser96 and hFSH beta-subunit residues 95-108 for hCG beta-subunit residues 101-108

- 10 <400> 66
 - Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu 1 5 10 15
- 15
 Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr
 20
 25
 30
- 20 Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val 35 40 45
- Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe 50 55 60
- Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Pro Asn Val Val 65 70 75 80
 - Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Cys 85 90 95
- Thr Thr Asp Cys Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe
 100 105 110
- 40 Gly Glu Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu
 115 120 125
- Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu Pro Gln 45 130 135 140